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LEGAL
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PATENT ABSTRACTS OF JAPAN

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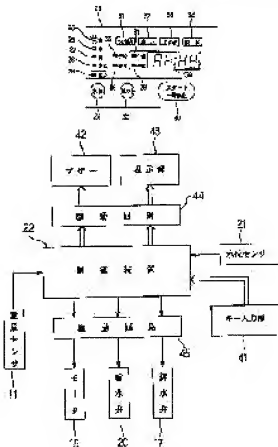
(72)Inventor : HIRANO TAKAYUKI

(54) WASHING MACHINE

(57)Abstract:

PURPOSE: To correctly set the feed water level by manually resetting the water level according to the display of the optimum water level by a set water level display means when the set water level by a manual water level setting means differs from the optimum water level matched with the laundry quantity.

CONSTITUTION: A control device 22 receives the action setting from a key input section 41 and judges whether the feed water level is manually set by a water level key 24 or not. When the control device 22 judges that the water level is manually set, it displays the set content including the set water level on a display section 43, then it detects the laundry quantity. When the control device 22 judges that the water level manually set by the water level key 24 is not matched with the optimum water level, it rings a buzzer 42 and displays the optimum water level on the display section 43. A user manually resets the water level accordingly, thus the feed water level can be correctly set.



JAPANESE

[JP,05-168789,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS OPERATION EXAMPLE DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

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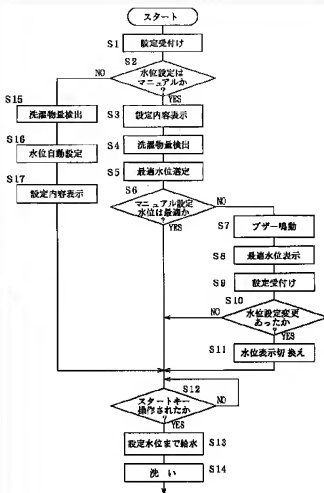
CLAIMS

[Claim(s)]

[Claim 1] An amount detection means of washing to both detect the amount of washing as it is characterized by comprising the following. And the optimal water level suitable for the amount of washing is selected from a detection result by the amount detection means of washing. A washing machine provided with a control means which carries out control for which the optimal water level is displayed on a setting water level displaying means when it is judged that setting water level by a manual water level setting means differs from the optimal water level by the result as compared with setting water level by a manual water level setting means. A manual water level setting means for carrying out manual setting out of the supply water level. A setting water level displaying means which displays set-up supply water level.

Drawing selection

Representative draw



[Translation done.]

[Translation done.]

JAPANESE

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the washing machine which can carry out manual setting out of the supply water level.

[0002]

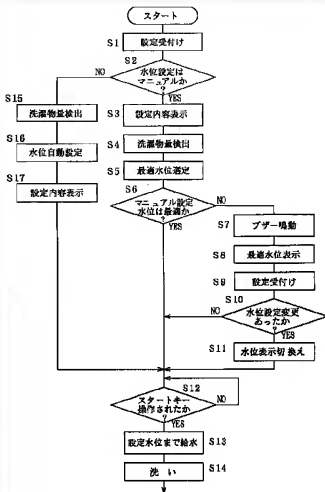
[Description of the Prior Art] Conventionally, in the washing machine, what can carry out manual setting out of the supply water level is offered.

[0003]

[Problem(s) to be Solved by the Invention] However, when manual setting out of the supply water level was carried out, for example, it may be apprehensive about a user's supply water level being too low to fully wash, supply water level may be set up highly more than needed, and the error had also become a waste of water and a detergent in this case. On the contrary, the user might think too much about water

Drawing selection

Representative draw



[Translation done.]

saving and might set up supply water level quite lower than a required water level, in this case, the washing could not fully be washed but the trouble of washing out was produced.

[0004] This invention is made in view of an above-mentioned situation, therefore the purpose has it in providing a user with the washing machine which can carry out manual setting out of the exact supply water level as much as possible.

[0005]

[Means for Solving the Problem] To achieve the above objects, in a washing machine of this invention, Have a manual water level setting means for carrying out manual setting out of the supply water level, and a setting water level displaying means which displays set-up supply water level, and. An amount detection means of washing to detect the amount of washing, And the optimal water level suitable for the amount of washing is selected from a detection result by the amount detection means of washing. When it was judged that setting water level by a manual water level setting means differs from the optimal water level by the result as compared with setting water level by a manual water level setting means, it had a control means which carries out control for which the optimal water level is displayed on a setting water level displaying means.

[0006]

[Function] When the setting water level by a manual water level setting means differs from the optimal water level which suited the amount of washing according to the above-mentioned means, setting out of exact supply water level can be performed by recarrying out manual water level setting out according to the display of the optimal water level by a setting water level displaying means.

[0007]

[Example] Hereafter, it explains with reference to the drawing per example of this invention.

[0008] The outer packaging 1 of the whole washing machine is first shown in drawing 2, the lifting and holding of the outer tub 2 are carried out to an inside with the elastic lifting-and-holding mechanism 3, and it is allocated in it. In detail, although the elastic lifting-and-holding mechanism 3 illustrates only one, it comprises two or more soldiers (for example, 4) 4 and the spring 5 formed so that this soldier 4 might be decorated, respectively and the load of the outer tub 2 might be received.

[0009] The deer was carried out, and under the spring 5, as

shown in drawing 3, the spring receptacle 6 is slidably provided in accordance with the soldier 4, respectively. Form the electrode 7 in the undersurface of this spring receptacle 6, and the electrode 9 is further formed in the spittle part 8 upper surface of soldier 4 lower end of that lower part, By making these estrange with two or more small springs 10 made to intervene between the spring receptacle 6 and the spittle part 8, and making them counter, the weight sensor 11 which functions as an amount detection means of washing is constituted like the after-mentioned.

[0010]In said outer tub 2, the inner lift 13 which has many dehydrating holes 12 in a circumferential flank is allocated, and the agitator body 14 is allocated in the inner lift 13 at the lower part. The drive mechanism 16 of the outer tub 2 which mainly makes the motor 15 the outside lower part with a subject is allocated.

The inner lift 13 is made to control at the time of washing and a rinse, and he rotates the agitator body 14, and is trying to rotate the inner lift 13 with the agitator body 14 by this at the time of drying.

In addition, the drain valve 17 and the exhaust hose 18 for discharging the water in the outer tub 2 (inside of the inner lift 13) outside the plane are also allocated in the lower part outside the outer tub 2.

[0011]Allocate the feed valve 20 for having equipped with the top cover 19 on the outer packaging 1, and on the other hand, supplying water in the inner lift 13 (inside of the outer tub 2) at the method of the inside of the rear of this, and. The water level sensor 21 which detects the water level in the outer tub 2 (inside of the inner lift 13) was allocated, and the control device 22 which is a control means was allocated in the method of the inside of anterior part, and also the navigational panel 23 is formed in the upper anterior part upper surface.

[0012]The above-mentioned navigational panel 23 has LED 25-29 which displays the "water level" key 24 which is a manual water level setting means about the part as shown in drawing 4 in detail, and each water level of the "quantity" which is a setting water level displaying means, "inside", ["low"], a "small quantity", and the "minimum."

In addition to this, Execution distance. LED35 which displays the "selection" key 30 for choosing, the displays 31-34 of each distance chosen, and a "request to print out files", LED36 which display the "remainder", LED37 which

display the "morning", LED38 which display an "afternoon", current time, reservation time, the residual time of each distance, etc. It has the digital display machine 39 and "start / halt" key 40 grade to display.

[0013]As the control device 22 comprises the microcomputer and it is shown in drawing 5, A manipulate signal is inputted from the key input section 41 which comprises the various operation keys which made the start the above-mentioned a "water level" key 24, the "selection" key 30, and "start / halt" key 40, and. Based on the control program which weight detecting signals were inputted from said weight sensor 11, and the water level detecting signal was inputted and was further memorized beforehand by the input list of that from the water level sensor 21, the annunciator 42, for example, a buzzer. LED 25-29 for the above-mentioned water level displays, the distance displays 31-34 and other various LED 35, 36, 37, and 38 for a display, the drive circuit 44 that drives the indicator 43 which comprises digital display machine 39 grade, and the motor 15 of said drive mechanism 16, A driving control signal is given to the drive circuit 45 which drives the feed valve 20 and the drain valve 17, respectively.

[0014]So, below, the control content by the above-mentioned control device 22 is described. As shown in drawing 1, the control device 22 receives the operation setting from the key input section 41 to the beginning by which the operation was started (Step S1), and it is judged whether next, setting out of supply water level was performed by the "water level" key 24 by the manual from the inside (Step S2). Here, if it is judged that setting out of supply water level was performed by the manual, a setting detail including the display of the setting water level will be indicated the indicator 43 (Step S3), and, subsequently the amount of washing will be detected (step S4).

[0015]In the case of the thing of this composition, the weight sensor 11 performs detection of this amount of washing, and the weight sensor 11, If the washing is put in in the inner lift 13, since the spring receptacle 6 will descend via the spring 5 of the elastic lifting-and-holding mechanism 3 by the weight and the distance over the electrode 9 of the electrode 7 will change with them, the electric capacity between these electrodes 7 and 9 changes, it is what emits an output signal suitable for it -- the output signal -- the quantity (weight) of the washing -- it differs by how and detection of the amount of washing is performed in this

way.

[0016]After it carries out a deer and the control device 22 detects the amount of washing as mentioned above, the optimal water level suitable for the amount of washing -- "-- high" and "inside" -- "-- it selects from the water levels of low", a "small quantity", and the "minimum" (Step S5), and it is judged whether the water level manual setting out was carried out [the water level] by the previous "water level" key 24 subsequently to the selected optimal water level is correct (Step S6). And if it is judged that the water level manual setting out was carried out [the water level] by the previous "water level" key 24 does not suit the optimal water level there, singing of the buzzer 42 will be carried out, and the optimal water level is displayed on the indicator 43 (Step S7, S8).

[0017]It is in the situation in which "inner" LED26 is carrying out the continuous light by drawing 4's expressing the one situation and having been set as "inside" by the manual, it is a detection result of the amount of washing -- "-- the optimal water level of high" was selected -- "-- LED25 of high" blinks -- this -- "-- indicating that the water level of high" is the optimal -- a user -- "-- change of setting out to the water level of high" is urged.

[0018]Then, if it judges whether there was any change of water level setting out following the next setting-out receptionist (step S9) (Step S10) and it is judged that there was change of water level setting out, The change changed into that to which the display was also set (in an above-mentioned case.) It carries out that "inner" LED26 is made to switch off and it is made to carry out the continuous light of LED25 of "quantity" (Step S11). In subsequently, the place which judged whether the start key 40 was operated (Step S12), and was judged that it was operated. Next, the feed valve 20 is made to open wide, feed water to setting water level (in this case, water level after change) is performed (Step S13), and it washes by rotating the agitator body 14 with the drive mechanism 16 after that (Step S14), and also progresses like the next line.

[0019]If it is judged at previous Step S10 that there was no change of water level setting out, it will progress to Step S12 after that, and feed water to the first manual setting water level will be performed at the following step S13.

[0020]Also when it is judged that the water level by which manual setting out was carried out suits the selected optimal water level at Step S6, it progresses to Step S12 after that, and feed water to manual setting water level is performed

also at the following step S13.

[0021]When it is judged at Step S2 that setting out of supply water level was not performed by the manual, Next, the amount of washing is detected like step S4 (Step S15). Then, the required water level based on that detection result is set up automatically (Step S16), it progresses to back (Step S16) step S12 which displayed the setting detail on the indicator 43, and feed water to the water level set up automatically in this case is performed in the following step S13.

[0022]Thus, when it is judged that the optimal water level suitable for the amount of washing is selected from the detection result of the amount of washing in the thing of this composition, and the water level which carried out manual setting out does not suit it, Since the optimal water level is displayed on the indicator 43 and he is trying to demand change of water level setting out to the optimal water level from a user, when a user redoes manual water level setting out according to it, Setting out of exact supply water level can be performed, and, therefore, a waste of the water by carrying out manual setting out of the supply water level highly more than needed and a detergent can be prevented as much as possible, And the problem of the shortage of wash by carrying out manual setting out of the supply water level quite lower than a required water level (washing out) can also be prevented as much as possible.

[0023]It may be a burden sensor etc. which detect the burden applied to the motor 15 when the washing is agitated, for example by the minimum water level as an amount detection means of washing except an above-mentioned weight sensor.

[0024]In addition, this invention is not limited only to the example which was described above and shown in the drawing, about points, such as existence of a function which sets up especially a water level automatically, within limits which do not deviate from a gist, is changed suitably and can be carried out.

[0025]

[Effect of the Invention]By the above description so that clearly the washing machine of this invention, Have a manual water level setting means for carrying out manual setting out of the supply water level, and a setting water level displaying means which displays the set-up supply water level, and. An amount detection means of washing to detect the amount of washing, And the optimal water level suitable for the amount of washing is selected from the detection result by the amount detection means of washing.

When it is judged that the setting water level by a manual water level setting means differs from the optimal water level by the result as compared with the setting water level by a manual water level setting means, are characterized by having a control means which carries out control to which the optimal water level is displayed on a setting water level displaying means, and by that cause, The outstanding effect that a user can be made to be able to do manual setting out of the exact supply water level as much as possible, and a waste of water and a detergent can also be prevented as much as possible, and the problem that wash is insufficient can also be prevented as much as possible is done so.

[Translation done.]